

REMARKS

Claims 1-3 stand rejected under 35 U.S.C. 103(a) as being obvious over Murakami et al. (U.S. Patent No. 6,525,718) and further in view of Sato et al. (U.S. Patent No. 6,345,887). In response, Applicant amended claim 1 and respectfully traverse the rejection because the cited references do not disclose or suggest that the liquid crystal panel and the printed circuit board are connected via the flexible circuit board in the source driver.

Sato is directed to an ink jet head for a non-impact printer. Sato fails to disclose a liquid crystal display device, let alone an arrangement that has a liquid crystal panel and a printed circuit board connected via a flexible circuit board in a source driver.

Murakami teaches a flexible circuit board 4 and a driving IC 7 which are cascaded with respect to each other, and has a cascade connection of the input signal that is different from the present invention. More specifically, Murakami teaches that the input signal is cascade connected to the each flexible circuit boards.

In contrast, the present invention has main wirings 30, as shown in Fig. 2, that extend from the printed circuit boards without passing through each of the flexible circuit boards. That is, the main wirings 30 are not cascaded. Instead, the driving IC's in each flexible circuit board are cascaded with respect to the input signal. Accordingly, the present invention has the input signal obtained by branching the main wirings 30 into the branch wirings 32.

This feature is advantageous because if there are many branch wirings, then the pitch of the flexible circuit board becomes short. However, in the present invention, one

bundle of the branch wirings 32 are used at plural driving IC's in the flexible circuit board by cascading the driving IC's in each flexible circuit board with respect to the input signal, and therefore many branch wirings are not necessary even if there are many driving IC's. Consequently, the pitch of the input terminal of the flexible circuit board can be increased, and the flexible circuit board and printed circuit board can be suitably connected to each other even if heat constriction occurs, unlike the arrangement of Murakami.

In Murakami, each flexible circuit board has the output terminals of the driving IC's, and moreover, has the output terminals for cascade connection with the next flexible circuit board and the input terminals cascade connected with the previous flexible circuit board to provide cascade connection to other flexible circuit boards. The output terminals of the previous flexible circuit board are connected to the wirings of the substrate (1 or 2) and these wirings are connected to the input terminals for cascade connection to the next flexible circuit board. Thus, the wirings between the substrate (1 or 2) and the flexible circuit board are so crowded that the pitch of the wirings becomes short. As a result, a problem of poor connection can occur. Murakami fails to overcome this problem because plural driving IC's are cascaded in each flexible circuit board.

In the present invention, however, cascade connection is completed within the flexible circuit board. That is, the wirings for cascade connection do not leave the flexible circuit board. Therefore, the above-mentioned problem of poor connection is overcome as compared with the structure of Murakami. This is because while each flexible circuit board receives the input signal from the branch wirings 32 of the printed circuit board, the flexible

circuit boards do not have any output terminals for cascade connection to the next flexible circuit board. Therefore, the number of connecting points between the terminals of the flexible circuit board and the terminals outside of the flexible circuit board is reduced as compared with Murakami, which advantageously overcomes the above-mentioned connection problem with respect to the pitch.

In addition to the above, Applicant traverses the §103 rejection of claims 1-3 because Sato is nonanalogous prior art. MPEP 2141.01(a) teaches that a reference must either be in the field of Applicant's endeavor or, if not, than reasonably pertinent to the particular problem of which the inventor was concerned, citing *In re Oetiker*, 977F.2d 1443, 1446, 24USPQ2d 1443, 1445 (Fed. Cir. 1992). Sato is not in Applicant's field of endeavor, namely a liquid crystal display device. Rather, Sato is directed to an ink jet head for a printer.

Sato is also not reasonably pertinent to the particular problem with which the inventor of the present invention was concerned. The object of the present invention is to provide a liquid crystal display device enabling a secure connection between the input terminals of a flexible printed circuit board and the output terminals of a printed circuit board even when the pitch of the input terminals of a flexible printed circuit board is narrow. (See Applicant's specification, page 2, lines 27-32). In the structure of the present invention, since the cascaded driver ICs are mounted on each flexible printed circuit board, the number of input terminals of the flexible printed circuit board can be reduced in total. This allows an increase in the width of the flexible printed circuit board, and a pitch of the input terminals of

the flexible printed circuit board. Thus, the input terminals of the flexible printed circuit board can be securely connected to the output terminals of the printed circuit board. (See Applicant's specification, page 3, lines 14-26).

In contrast, Sato discloses as an object providing an ink jet head in which electric bonding members are provided between a piezoelectric element for providing oscillations to a pressure chamber communicating with an ink jet nozzle and a circuit substrate having a head driving circuit, thus permitting improvement of the qualitative reliability and the yield, cost reduction, head size reduction, prevention of erroneous head operation and rupture of a driver IC. (See col. 2, lines 49-57). Since Sato is not concerned with the problems of the present invention, or in Applicant's field of endeavor, Applicant respectfully requests removal of Sato as nonanalogous prior art.

For all of these reasons, withdrawal of the 35 U.S.C. §103 rejection of claims 1-3 is respectfully requested.

New claims 4-5 are added and depend from claim 1. Applicant respectfully solicits allowance of new claims 4-5 for the reasons recited above with respect to the rejection of independent claim 1, and also because of the additional features that claims 4-5 recite.

For all the foregoing reasons, Applicant submits that this Application is in condition for allowance, which is respectfully requested. The Examiner is invited to contact the undersigned attorney if an interview would expedite prosecution.

Respectfully submitted,

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